ALARM APPLICANT STUDY GUIDE

ALARM is the name of the basic skills test for fire fighter job applicants. This test measures important basic abilities required for performing the job of fire fighter. There are four parts to the test, and each part has separate instructions. The test questions deal with reading comprehension, mathematical skills, mechanical reasoning ability and table interpretation.

When you take the ALARM test, you will be required to put your answers on a separate answer sheet. There are three choices for each question. You must select the choice you believe is correct, and fill in the corresponding space on the answer sheet.

Your score will be the number of correct answers you mark. It is to your advantage to answer all questions, even if you are not sure your answer is correct.

If you work right along, you will probably have time to consider all of the questions in the test booklet. Work carefully, but do not spend too much time on any one question. Answer the easier questions first, then return to the harder ones. There are 100 questions in all. The time limit for the test is two hours.

In the ALARM examination, the number of test questions in each subject matter area is as follows:

SUBJECT	NO. OF QUESTIONS
Reading Comprehension	50
Mathematical Skills	20
Mechanical Reasoning	15
Table Interpretation	15
	100 Questions

A practice test has been included in this study guide to help you prepare for the upcoming ALARM examination. This study guide is made up of 25 questions that are similar in form to the types of questions in the ALARM examination. The questions are divided into subject matter areas with the test instructions for each of the four topics.

After you have taken the test, you can refer to the answer key on Page 11 to check your answers. GOOD LUCK!!!

PRACTICE TEST

PART I. READING COMPREHENSION

This part of the test contains a passage of reading material concerning fire fighter subject matter. Following the passage is a number of multiple-choice questions. Read the passage carefully, and then decide on the basis of the passage which of the choices best answers the questions. Choose your answer based upon what is in the passage, not on information you may have from other sources.

Smoke conditions will vary according to how the burning has progressed. A free-burning fire must be treated differently from one in the smoldering stage. A fire that is relatively small in size is frequently mistaken for a large generalized fire because of the large volume of smoke. Smoke accompanies most ordinary forms of combustion, and it differs greatly with the nature of the substances being burned and the amount of available oxygen. In addition to the gaseous products of combustion, other constituents such as tar, unburned carbon, and ash are drawn upward by the draft created by the heat of the fire. The density and color of the smoke are in direct ratio to the amount of suspended particles. A fire that is just starting and is consuming wood, cloth, and other ordinary furnishings will ordinarily give off gray white or blue white smoke of no great density. As the burning progresses, the density may increase, and the smoke may become darker because of the presence of larger quantities of carbon particles.

Black smoke is usually the result of burning hydrocarbons such as rubber, tar roofing, oil, or plastics. It has been said that brown smoke may indicate nitrous fumes and that gray yellow smoke is a danger signal of an approaching back draft. A fire fighter should remember that the chemicals which smoke may contain could only be determined by chemical analysis. Although the color of the smoke may be of some value in determining what is burning, smoke color is not always a reliable indicator.

The point at which the smoke is escaping may offer some indication of a possible solution to the ventilation problem. If smoke is coming out of a lower story, it may indicate that openings are blocked above the point where smoke appears. Several possibilities must be considered when determining where to ventilate. If smoke is coming through only one end of the building, it may indicate the location of the fire or it may be the result of wind direction.

When a fire is confined and has gained much headway, the smoke may be coming out around the roof, through openings, around skylights, penthouses, scuttle holes, and even through small openings in the walls. It may be lazily drifting out into the atmosphere, or it may be coming out with a great deal of force. Tests show that only a slight positive

pressure exists inside a burning building. The speed with which smoke emerges is, however, an indication of inside conditions.

1) The burning of hydrocarbons results in:

   a. back draft.
   b. toxic gases.
   c. black smoke.

2) Which of the following factors was not mentioned in the passage as a reason for dark smoke?

   a. The type of material burning.
   b. The location of the fire within a building.
   c. The quantity of carbon particles.

3) One danger, signal of an approaching back draft is:

   a. smoke density.
   b. the speed with which smoke emerges.
   c. gray yellow smoke.

4) Taking note of the location where smoke emerges from a building is relevant to:

   a. the ventilation problem.
   b. the pressure inside the building.
   c. the type of material burning.

5) The amount of suspended particles determines smoke _____ and _____.

   a. color and heat
   b. density and color
   c. pressure and density

6) Which of the following conclusions is most supported by the passage?

   a. Smoke color is of no value in determining fire conditions.
   b. Smoke color may be an unreliable indicator of what is burning.
   c. Smoke color is unrelated to the substance which is burning.

PART II. MATHEMATICAL SKILLS

This part of the test contains a number of math problems. Read the problem carefully, then decide which of the answers is correct.

7) A hose line made up of 90 fifty-foot sections is extended by 1,550 additional feet. The total length of the hose line is:

a. 2,950 feet.
b. 2,000 feet.
c. 6,050 feet.

8) Siding material is .625 inches in thickness. A stack of 350 sheets would be how high in inches?

a. 21.8 inches
b. 218.75 inches
c. 2,187.5 inches

9) If a water tank which holds 60,000 gallons is emptied at the rate of 120 gallons per minute, how many minutes are required to empty the tank three-quarters of its capacity?

a. 375 minutes
b. 500 minutes
c. 125 minutes

For questions 10 to 12, you are to solve the following formulas to determine the correct value of Y.

10) $Y = 8 \times \frac{R}{S}$

in which R = 55 and S = 11

a. 40
b. 1.6
c. 968

11) $Y = (M^2 + 44) - P$

in which M = 40 and P = 762

a. 1,600
b. 882
c. 1,644

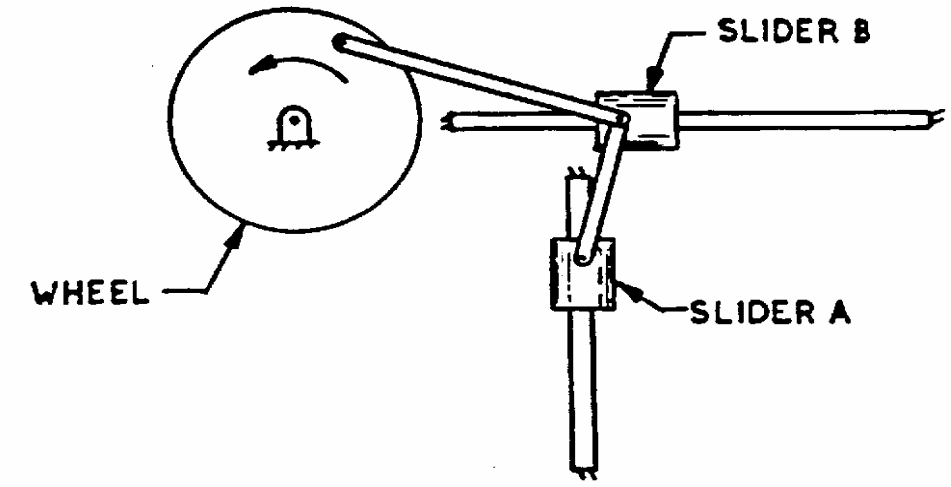
12) $Y = (13 \times A) + \frac{A^2}{2A}$

in which A = 25

a. 337.5
b. 325
c. 362.5

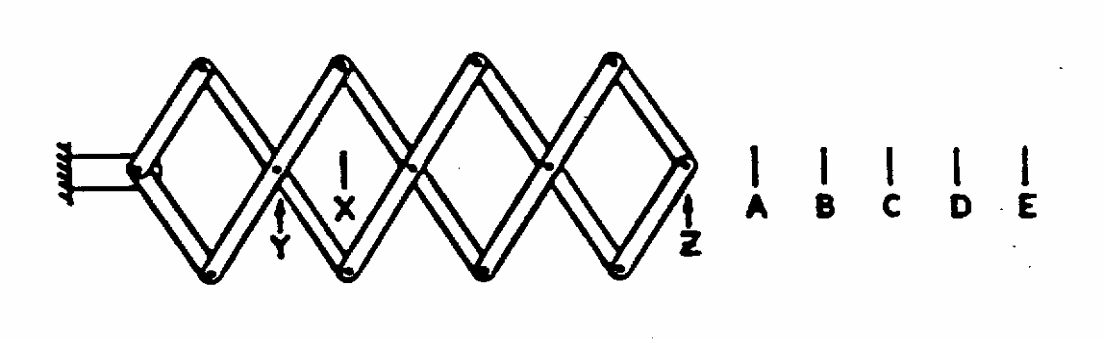
PART III. MECHANICAL REASONING

With each drawing are one or more questions about the device. Study the drawing carefully, then answer the questions on the basis of information presented in the drawing.



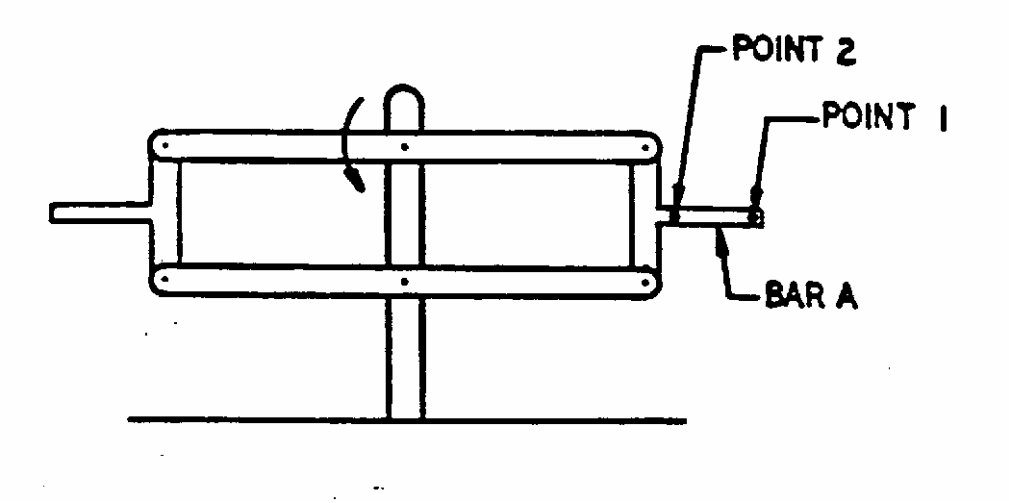
13) As the wheel completes two complete revolutions, slider A will reverse its direction of travel:

a. 16 times
b. 8 times
c. 4 times



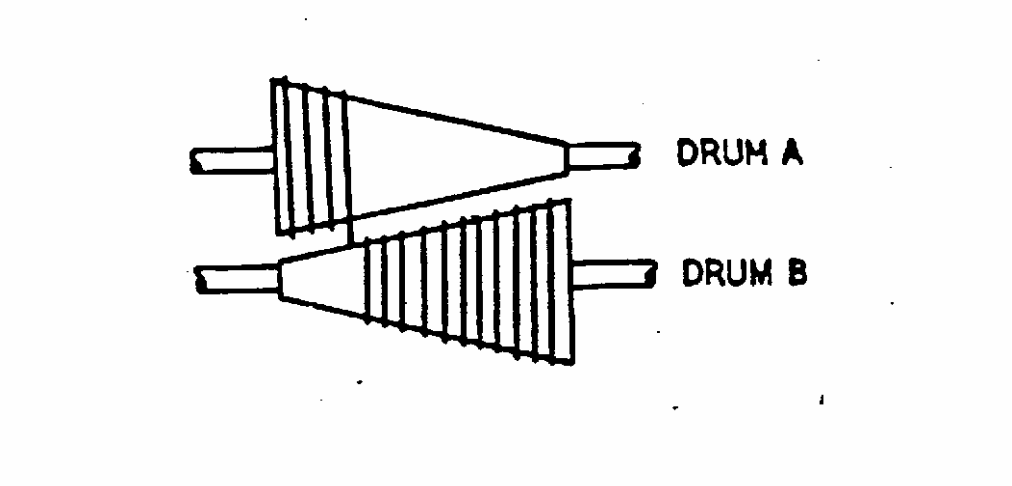
14) If the linkage is expanded so that point Y rests on line X, on what line will point Z come to rest?

a. A
b. B
c. D



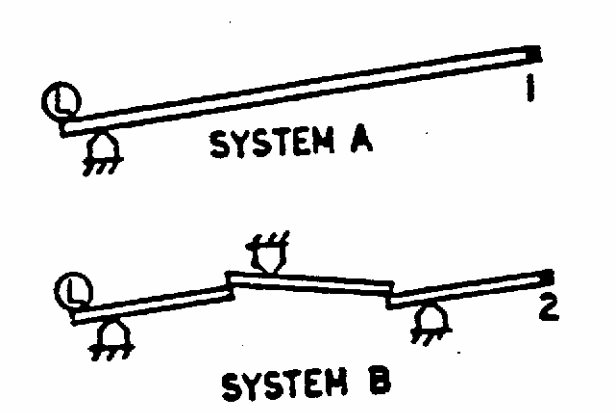
15) As the top beam is rotated in the direction indicated, bar A will move:

a. upward, with point 1 moving higher than point 2.
b. upward, with point 2 moving higher than point 1.
c. upward, with point 1 and point 2 moving upward the same distance.



16) Drum A turns at a constant speed. As the rope is wound onto drum A, drum B will turn:

a. increasingly faster and in the same direction as drum A.
b. increasingly slower and in the same direction as drum A.
c. increasingly slower and in the opposite direction as drum A.



17) A man is considering two lever systems, A and B, to lift a load, L, applied at the left end of each system as shown. He will push at point 1 on system A and at point 2 on system B. The force he must apply to system A in order to lift the load:

a. is much greater than the force he must apply to system B.
b. is much less than the force he must apply to system B.
c. is about the same as the force he must apply to system B.

18) In order to lift the load, L, the same distance, the man must move:

a. point 1 much farther than point 2.
b. point 2 much farther than point 1.
c. point 1 and point 2 about the same distance.

PART IV. TABLE INTERPRETATION

The questions in this part of the test are based on the following table. Study the table carefully, then answer the questions on the basis of the information contained in the table.

Annual Precipitation and Related Fire Statistics

YEAR	Precipitation (Inches)	Structural Fires	Wildland Fires	Total Fire Loss (Millions)
1970	27	119	81	49
1971	32	164	94	52
1972	29	169	83	72
1973	54	175	177	94
1974	19	170	112	52
1975	21	158	87	87
1976	17	144	151	63
1977	40	151	91	36
1978	36	125	114	54

19) In which year did the greatest number of structural fires occur?

a. 1973
b. 1974
c. 1975

20) In which year did the greatest total number of fires occur?

a. 1973
b. 1974
c. 1976

21) In how many years did the number of wildland fires exceed the number of structural fires?

a. nine
b. seven
c. two

22) In how many years did the number of structural fires decrease as compared with the preceding year?

a. two
b. three
c. four

23) For those years in which precipitation decreased, as compared with the preceding year, how often did the number of structural fires increase over the preceding year?

a. one
b. two
c. three

24) For those years in which fire loss exceeded sixty million dollars, how often did the number of wildland fires exceed one hundred?

a. one
b. two
c. three

25) How often did the number of structural fires increase while fire loss decreased as compared to the prior year?

a. zero
b. one
c. two

TEST KEY

PART I: READING COMPREHENSION

1. C
2. B
3. C
4. A
5. B
6. B

PART II: MATHEMATICAL SKILLS

7. C
8. B
9. A
10. A
11. B
12. A

PART III: MECHANICAL REASONING

13. B
14. C
15. C
16. C
17. C
18. A

PART IV: TABLE INTERPRETATION

19. A
20. A
21. C
22. C
23. A
24. B
25. B

TEST TAKING POINTERS
THAT BUILD CONFIDENCE AND REDUCE NERVOUSNESS

KEY TO SUCCESS

Know the material and demonstrate your knowledge or ability.

FORMULA FOR LEARNING

Remember 10% of what you READ
Remember 20% of what you HEAR
Remember 30% of what you SEE
Remember 50% of what you HEAR & SEE together
Remember 70% of what you SAY
Remember 90% of what you DO

STUDYING

Read and outline
Look for key terms and concepts
Flash cards
Tape recorders
Associations and acronyms
Study partners
Study during your best time of the day
Study for 45 minutes and then take a break
Study as though you were taking an essay test

DAY OF THE TEST

Keep same routine night before test. Get plenty of rest and don't cram.
Arrive about 15 minutes early.
Avoid door cram sessions and nervous candidates or crammers.
Eat a good meal – gets more oxygen to your brain.
Read directions and each question carefully.
Never leave a question blank.
Always go back and check your answers.

TEST TAKING PROCESS

FIRST – Go through the test and only answer questions if you immediately know the answer. Do not dwell on any one item. This builds your confidence and avoids panic.

ON SECOND PASS – Read questions carefully and note (underline or highlight) key words in the stem. Change answers only if you are certain your first answer is wrong.

NEXT PASS – Go through each item and eliminate obviously wrong choices. Use process of elimination to increase your odds.

If you are still stuck, use guessing strategies.

GUESSING STRATEGIES

1. When in doubt, guess B or C.
2. If an answer does not grammatically follow the question, it is probably incorrect.
3. ALWAYS and NEVER tend to appear in incorrect answers.
4. Qualifying adjectives indicating possibilities (sometimes, may, generally, perhaps) tend to appear in true statements.
5. Correct answers tend to be longer than incorrect answers.
6. Correct items sometimes repeat terms in the question.
7. Partly true and partly false statements are ALWAYS false.
8. Incorrect items tend to be vague.
9. If there are two answers which seem to be opposite of each other, one is probably correct.
10. Answers with a technical term you are unfamiliar with are usually incorrect.
11. If two answers overlap or mean essentially the same thing, both are probably incorrect.
12. If two choices are both correct, then "all of the above" is correct.
13. When "all of the above" is a choice, it is often the correct choice.

NOTE: Use these strategies ONLY if you have no idea about the correct answer. Using these strategies to take an entire test will not work. There is no substitute for proper preparation.

HOW TO PREPARE FOR A TEST OF GENERAL ABILITIES INSTEAD OF A TEST OF KNOWLEDGE

1. Find out what is being measured on the test and what types of questions will be used.
2. Find similar practice tests or workbooks and take practice tests.
3. Time yourself when you practice and practice using the test taking pointers.
4. Find a quiet place without interruptions to practice taking tests.
5. Sources for practice tests and workbooks: college bookstores, retail bookstores & libraries. Ask for books on taking civil service exams, military exams or college entry exams.
6. Take a military entrance exam.